

Bolas's
Photographic
Annual

FOR 1890.



HAMPTON, JUDD & CO.,
14 DUKE ST., ADELPHI, LONDON, W.C.

CROWN 8VO CLOTH.

PHOTO-ENGRAVING, PHOTO-ETCHING,
AND COLLOTYPE.

By W. T. WILKINSON.

The new edition of the above, entirely re-written and revised, is now in the press, and will be published immediately. Orders should be given at once.

HAMPTON, JUDD AND CO.,
14 DUKE STREET, ADELPHI, LONDON, W.C.



A Review of the Past Year.

PERHAPS the most notable thing of all in connection with that year which marks the time when practical photography is half a century old, is the widespread extent to which photography is practised as a popular pursuit, this being evidenced by the numerous new societies which have been formed over the country, the great number of local exhibitions, and the extensive construction and sale not only of cheap apparatus, but of instruments of an exceptionally elaborate and expensive sort. A small metal detective-camera, complete with lens, and capable of giving good results in the hands of one who knows how to use it to the best advantage, is actually sold in the toy-shops of London for five shillings. With the extended use of the camera, the optical lantern has grown in popularity; but taste has run upon photographs as slides rather than crude coloured transparencies such as were in high favour a generation ago.

A tendency of the time is towards greater simplicity, or perhaps we should say reality, in photography, and this manifests itself in the less frequent and less obtrusive use of what one may call studio properties; indeed, the pasteboard pillar or balustrade, and the background showing an extensive sea or mountain

view, is rarely seen except in the case of the work of those photographers who obtain the lowest prices, and whose customers are deprived of most opportunities of culture by the fact that they toil more than their just share. The widespread tendency to simplicity and reality is largely due to the direct influence of men who, like Dr. Emerson, have grasped the spirit of the time and given it word; and the issue of two editions of his "Naturalistic Photography" during the year may be considered one of the events of the time. In the present day a combination of photographs is criticised in a very different spirit from that of even ten years ago, any considerable outraging of truth or possibility being almost at once remarked, even in the exhibition room of a small town, while the old style of street photograph, in which the policeman and a few small boys are ranged in a row in front of the main building shown, is at once looked on as a burlesque, and, if shown, is shown as an example of what not to do. The exhibition held in the house of the Camera Club of the photographs of the late O. G. Rejlander has done a good deal towards showing the kind of possibilities that may exist regarding what has been termed "artistic" photography, and to illustrate how very much control a capable photographer may exercise over the facial expression of his models. One of Rejlander's most striking studies, "She is looking at me, the dear Creature," forms the frontispiece to our present volume.

With respect to that which may be called definite technical progress, considerable advance has been made, and in connection with this phase of the year's work we may refer to the much clearer understanding which has been arrived at regarding the use of magnesium for lighting purposes, to say nothing of

the cheapening of magnesium by better modes of production.

It was at the meeting of the Photographic Society of Great Britain held on the last evening of the year that the main points regarding magnesium were clearly put and defined. As regards the flash-light, they are to protect the lens from stray light by a hood, to avoid photographing the eyes with much-expanded pupils, by making the lamp-light as bright as possible before the flash, to make the flash quick by minimising the amount of powder burned at each lamp (thus avoiding the partial closing of the eyes during the flash) to dry the magnesium powder in wet weather, and to avoid the use of mixtures made up with oxidising compounds like chlorate of potassium. With respect to the burning of the magnesium ribbon, the main point, as exemplified by the lamp of Mr. Ney, of Berlin, is that a striker should knock off the magnesium ash at short intervals. Ney's lamp will burn steadily for an hour or more, and was strongly recommended by Mr. Warnerke for copying and other purposes.

The eikonogen developer is an introduction of the year, and we may now give the formula which Mr. Warnerke found so serviceable during his stay in Paris, a formula which is likely to prove useful to those working away from headquarters. He described it at the last meeting of the year, and it is as follows:—

Distilled water which has been	
boiled and allowed to cool	100 parts
Sulphite of soda	40 „
Dissolve, and add—	
Crystallised eikonogen.....	10 „
Caustic potash.....	10 „

Cork well. For use, dilute with from three to ten times its volume of water. Mr. Warnerke strongly recommends this for short exposures and dull days.

Printing on rough drawing-paper has been a feature of the year—a revival rather than an introduction. Mr. Biggs, to whom this revival is largely due, recommends salting Whatman's drawing-paper by floating on a bath composed of four grains of gelatine and five grains of common salt in an ounce of water, when dry it being sensitised by the following:—Nitrate of silver, 60 grains; water, 1 ounce. Ammonia is added, drop by drop, till the precipitate formed is just redissolved. The paper is laid on a flat board, salted side up, and the sensitising solution is applied freely with a Buckle's brush. Drying, printing, toning, and fixing as in the case of a print on albumenised paper.

Platinum toning of silver prints has been revived, and prints on rough paper, as recommended by Mr. Biggs, lend themselves excellently to this process. An excellent toning preparation is that given on page 58.

The introduction of the thin rollable celluloid film by the Eastman Company also marks the past year, the celluloid in this case being actually thinner than the paper upon which our *Annual* is printed, and at the same time quite clear and transparent like glass. A roller-slide camera, charged with this material, gives the tourist a new power, as the negatives are developed as easily as glass negatives, and no stripping or after-treatment is required.

Among the results of the year bearing less directly on every-day practice, we may refer to the further speculations as to the practicability of telephotogrammy, or photographing through a telegraph wire

—a matter not to be confounded with the telegraphic transmission of a sketch or handwriting, a matter reduced to *actual practice* by Bakewell forty years ago, and detailed in his “Electric Science,” published in 1853 by Ingram, Cooke & Co. Solar photography has made progress by the excellent results from the various expeditions for photographing the eclipse of December; but these results are saddened by the death of Father Perry, while with the expedition in British Guiana. Mr. Roberts, as the result of photographs of nebulæ, has conjectured—or shall we say established?—that one, at least, of these is a sort of enlarged representation of a planetary system. The conclusions arrived at by Professor Carey as to the existence of silver in allotropic forms, one of which is said to be soluble in water, and would seem to form the active ingredient in an ordinary “physical” intensifying solution, are remarkable, and will doubtless form the subject of future investigations.

The Paris Congress for the Unification of Constants has been disappointing as regards its results, the attendance being small and non-representative; still, something has been done which may bear fruit.

A few words as to our own work. The circumstance under which we established the *Photographic Review* are known to many of our readers; and towards the close of the year it became apparent that the heavy work incident to the printing and publishing, in addition to the less burdensome task of editing, was telling on our health in an unmistakable manner, and so acute did the matter become that as we pen these lines we are ceasing the work from absolute physical inability to continue; but we hope a short period of rest will make a change. For this reason our *Annual* is shorter and less complete than we intended.

What shall we say to those who have sent us papers which are left unprinted for the reason indicated above? We can say no more than we are so sorry, but yield to what we see no means of avoiding.



Original Communications to the Annual.

FROM MR. C. H. BOTHAMLEY.

The Eye and the Lens.

IN the discussions on the artistic aspects of photography which have been so frequent of late, comparisons have often been made between the eye and the photographic lens, more especially with reference to the definition of objects in different planes, and the so-called "angle of view." As a rule, these comparisons are made with a considerable show of knowledge, but nevertheless it is not at all uncommon to find that the essential differences between the dead apparatus and the living organ have been very imperfectly recognised. Most writers seem to forget that the operation or act of "seeing" is not a function of the eye alone. We have not only to deal with a receiving apparatus in the form of an eye, but also with a transmitting apparatus in the form of nerves, and a recording apparatus in the form of a brain. The brain is obviously different

from a photographic plate, and there is nothing between the lens and the plate which resembles the nerves in their mode of action, so far as we know. Moreover, as a matter of fact, there are very important differences between the eye and the lens. A lens, if properly used, remains fixed in one place and directed towards one point, whilst the eye is constantly in motion in its socket, and hence the direction of vision is constantly changing; the focal length of a given lens is invariable, but the focal length of a normal eye is continually varying. Every impression received by the eye persists in the form of a sensation for about one-tenth of a second, and hence it follows that what we "see" at a given instant is the sum, or resultant, of all the impressions received during the tenth of a second immediately preceding. A lens performs no integration of this kind. Now applying these facts to the question of the definition of objects in various planes, it is quite true that, as a mathematical and physical fact, the eye at any instant is only in focus for one particular plane, but in consequence of what is known as the power of accommodation, the focal length of the eye changes with very great rapidity, and, with a healthy eye and brain, we never get a sensation of

blurring similar to that seen in a photograph which is "out of focus." Again, it is true that the eye, so long as it remains absolutely still, can only take in a very small angle of view. But the living eye is scarcely ever at rest ; it moves unconsciously in its socket, and hence in reality is efficient over a much wider angle. These movements are extremely rapid, and, in consequence of the persistence of vision, all the successive impressions become more or less combined, and the impression registered by the brain is that of a much more extensive view than if the eye were fixed. To discuss the artistic bearing of these facts would require much space ; but it seemed desirable to point out that in taking a photograph the phenomena are objective, whilst in the process of seeing the phenomena are to a great extent subjective. This important distinction ought not to be overlooked.

FROM MR. CHAPMAN JONES.

Thin or Thick Films.

FOR promiscuous negative work a thick film has many advantages. It prevents that small amount of halation that can scarcely be recognised as such, but which leads to a loss of detail in the high lights ;

and as in this way it allows a greater margin in exposure, the operator is enabled to get a richer gradation in the shadows. The want of uniformity in the thickness of the film, due probably to the unevenness of the surface of the glass plate, is practically overcome, and one is saved the annoyance of seeing the image quite through parts of the film before the detail is fully out and the density as great as desired.

But in spite of these advantages, which probably no one would deny, there are many photographers who unwittingly prefer thinly-coated plates. I believe this is simply due to impatience. The fixing and washing are done in the minimum time, and, of course, the thinner the film, the greater the probability of thorough fixing and effective washing. When the work is done in a hurry, the thinnest films fare the best.

Those who wish to excel will find, sooner or later, that apparatus and materials that specially allow rapid work will have to be given up. Rapidity of production and perfection of result are rarely associated. Not that there is anything to be said against a quick exposure, when circumstances compel it, so long as it is sufficient to give what is required ; but however short the time, the

exposure should be what is called "full." If, then, the development is carried out slowly and skilfully, the plate having a thick film, and if the fixing and washing are deliberately and thoroughly done, one is entitled to expect that the resulting negative will be worth varnishing and printing from.

To judge whether any plate has a sufficiency of emulsion upon it, look at its back after development and before fixing; and if any detail is visible almost as clearly as on the front, the thinness of the film is detrimental. But if the highest lights are only beginning to be visible at the back of the plate, there is plenty of emulsion upon it. It is a good rule that the effect of the light in exposure should never quite penetrate the film.

FROM W. JEROME HARRISON, F.G.S.

The Surroundings of Our Pictures.

HOW much a photograph owes to its frame! But what little thought and taste are, as a rule, devoted to the proper mounting and display of photographs. We see delicate quarter-plate prints—little gems in themselves—stuck in the centre of an expanse of white cardboard, and killed by the nature of their surrounding. I think

that a print placed behind a cut-out mount always looks better than when mounted upon a flat surface. It also seems to me that the material which borders the photograph should be of a tint intermediate between its darkest and its lightest shades. The "india-tint" now so much used answers to this description. Some pictures which I have lately had framed in the manner now to be described look cent. per cent. better than they did on an ordinary cream mount. First, immediately surrounding the photograph is a deep gilt bevel about $\frac{3}{8}$ of an inch in width; outside this is a width of 2 inches of oak veneer, while a reeded black margin $1\frac{1}{4}$ inches wide encloses the whole.

This especially suits prints of deep, rich tones—portraits, etc. For landscapes the oak margin should be rather dark, and the effect is then that of viewing the actual scene as through a window. Of course, the breadth of the frame must be in proportion to the size of the photograph; the dimensions given above are for pictures measuring 8 by 6 inches.

The making of picture-frames is a pleasant amusement for winter evenings. The only important joiner's tools required are a mitre-block and a tenon-saw; and I find that

frames can be made for just half the sum which it costs to buy them. Every good picture should have a frame to itself; it is a mistake to group a number of pictures into one frame. For small sizes the latter plan is often adopted, but it would be better to enlarge the best of these to, say, 10in. by 8in. size, and to keep the remainder in an album. It may be said that, as a rule, nothing below whole-plate size ($8\frac{1}{2}$ in. by $6\frac{1}{2}$ in.) looks well when hung upon a wall. This is more especially true of exhibitions.

FROM MR. WM. ADCOCK.

Bits of Experience.

THE other day a writer to a photographic weekly announced he was going to Saltburn; would any one tell him whether any "bits" were to be found there.

This appears to me sufficient text for a theme. Any bits at Saltburn-on-Sea? Is there half a mile of coast around our island on which plenty of bits are not to be found. Is there a square half-mile in the United Kingdom which, in summer time especially, will not furnish bits for the camera? That men exist largely who buy cameras, but are born without eyes to see such bits, is evident to those who, for the fun of it, read

the many idiotic questions gravely put in print.

There are people who wonder whether all the stupid portion of mankind become amateur photographers, or whether any of them follow other pursuits. Verily what is flamingly called our art-science is cheaply held. Bits? yes, bits abound on all sides. Sheep, cattle, horses, old hovels, and calves make bits universally on pasture-land. Mowers, hay-makers, teamsters, stackers, give precious bits on meadow land. The bare-looking common gives gorse and furze and bushes, with patches of grass for donkeys and lean kind to browse upon. Can no picture-poetry be got out of these things? Some of these, in addition to coast, and beach, and boats, and visitors, are found around every sea-side place. Do cornfields with stacks or corn gatherers give bits? Do farmyards with pigs and poultry give bits? Are there bits in ploughmen and harrowmen on arable land? Material for photographic bits is universal. Eyes to see them are more thinly strewn. It takes little to make a picture; it is the treatment of that little which yields success or failure.

Saltburn give bits! Are boats there and picturesque men who man them? Is a lonely

shore there? Are waves, and boiling surf, and sky there? "Bits!" Where, I again ask is a spot on which they cannot be found?

FROM MR. EDMUND E. FEARN

A Few Hints.

I FIND that when it is necessary to enlarge or copy to the full size of the camera, it is well to rack the camera out to the full extent, and then focus by moving the camera bodily. You are then enabled to get a negative as large as is possible with the camera used. Of course, if the image on the screen is too large, the camera should not be racked out so far; but it will be found a convenience to focus with the camera, and it also saves trouble when the focus of the lens is unknown.

It will preserve your lens if you have an extra cap for it to put over the back; this is specially useful as a protection when out in the field.

If you have a negative that is cracked (the glass only) you will be able to obtain a good print by placing in the frame first a piece of plain glass, and on the outside of the frame paste a piece of white tissue paper; then print in the sun, turning the frame round occasionally.

FROM MR. HORACE H. RODEN.

Two Notes on Black & White Printing.

I. **P**LATINOTYPE.—In his *Dictionary of Photography*, Mr. E. J. Wall advises possessors of old or ill-used hot process platinotype paper to try exposing it in the frame about as long as for silver printing, and to develop it in a solution of sodic carbonate and common alum. In a former almanac of the *British Journal of Photography*, Mr. H. M. Hastings advised a developer of potassic carbonate, with a small quantity of some hypochlorite, for paper that had “gone wrong” by inadvertent exposure to light or damp.

In March or April, 1888, a friend in India who was proceeding to England gave me a calcium tube, with about fifty pieces of whole and half-plate platinotype paper. He told me at the time that it was deteriorating. Shortly afterwards I came to England on furlough, and brought the paper with me, not having even opened the tin. It was put away and forgotten until last July. On opening up, the calcic chloride was found deliquescent, so little good, save for experiments, was anticipated from the contents.

I began on Mr. Wall's receipt, and obtained flat prints of a grey colour, without

detail and spotted all over. Mr. Hastings' formula was then resorted to, the same negatives being used, but with no better results.

One day while these experiments were going on, I was called away on other business, leaving a frame in the sun. I did not return for over three hours, all of which time the paper had been exposed to sunlight. Judge of my astonishment when, on opening the frame, I found a fully-developed image of the picture, with the high lights and half-tones more or less yellow, and the deepest portions black—in fact, as though the paper was “Pizzitype.” I then placed it in dilute HCl , and obtained a beautiful print unspotted, and full of detail and gradation, as good as could be desired. Further experiments show that almost any tone, from light brown to deep black, can be obtained according to the length of time the paper is exposed.

The chief difference between this and the Pizzighelli paper are that breathing on or steaming the paper has little or no effect; that there is no continuing action if the prints are not immediately placed in HCl after removal from the frame; and that the colour finally obtained tends to sepia rather than black.

Printing is very tedious, as it requires at least a dozen times the exposure from the same negative as does a silver print. Negatives with plenty of gradation and fairly dense give the best results, as is the case with the other forms of platinotype printing.

Care is required to place the frames as nearly as possible parallel to the sun's path, so that the rays may be equally distributed, or else the edges of the prints will be under-exposed. Partial reduction of the iron salt by damp or light seems to have very little effect on this style of printing, while the splendidly even coating of the Platinotype Company's paper ensures evenness of results ; so owners of damaged paper need no longer throw it away in despair.

2. *Bromide Paper.*—Quinol forms an excellent developer for these black and white prints, but there is a drawback to its use, for which I have as yet seen no published remedy.

If development be prolonged through under-exposure of the paper, or if old and coloured developer be used to restrain over-exposure, the paper is apt, especially towards the edges, to be stained a nasty yellow colour, which is unaffected by acids. Washing thoroughly before fixing will lessen the

stain considerably, but not entirely eradicate it. Moreover, when development has to be prolonged, or when it is not carried quite far enough, the prints, even on Eastman paper, acquire a disagreeable greenish-black tinge. As a rule, these two evils occur together, and there is one remedy which will cure both :—Dissolve in an ounce of water 20 grains of potassic iodide, and add to it one grain of auric terchloride ; the resulting fluid is of a deep brown colour, and seems to be very constant, the gold not being thrown down by exposure to heat or light.

To use this, add enough water to a small quantity of the solution to make the resulting mixture a pale sherry colour, and immerse the prints therein after well washing. The back of the print will rapidly assume a blue tint, due to the formation of starch iodide, and this will gradually deepen in colour, eating its way (visibly) into the weaker portions of the film. The yellow portions darken, but slowly, and finally assume a reddish purple tinge. At this stage the print should be removed from the dish. Soaking in cold water for an hour or so will remove all the blue tint, and the print will be found to be intensified throughout, the greenish tinge having turned to a pure black, and the

yellows altogether disappeared. Warm water will remove the blue colour very quickly, but is apt to ruin the film. The blue disappears at once in a weak solution of hypo, but then subsequent washing is needed.

The *rationale* of the action with regard to tone seems to be that some of the silver is converted into argentic iodide, and metallic gold is deposited in its place, whilst the argentic iodide is redissolved in the excess of potassic iodide in the solution. The removal of the yellow stain I do not understand, unless it be bleaching by potassic chloride. It must be noted that the stain caused by iron development is quite unaffected by treatment in this solution. This mixture of auric chloride and potassic iodide seems to have great possibilities in it. It will tone silver prints after fixing, though the results, so far, have not in my hands been very pleasing in appearance. It may also be of use in toning lantern slides; at any rate, it is worth experimenting with.

FROM MR. G. FOXALL.

Concerning Photographic Societies.

HOW very short often is the life of a photographic society, and how very

feeble and weak are many of those dragging out a miserable existence ! How many have been started with every promise of success, with a great flourish of trumpets and much enthusiasm, only to come to an untimely and speedy end ! Now, if a need exists at the start for photographers to get together for conference, &c., it is equally so at the miserable close and wind-up of some of these institutions ; so that it will not do to say there is no necessity for these societies. I do not believe anyone would say that for a moment ; they have been productive of too much good for that. Well, there must be a screw or screws loose somewhere, and my object will be to endeavour to point out some of these same screws.

I believe one of the chief defects to be too rigid adherence to the ordinary set and formal reading of a paper and a speech-making discussion thereon. It is a very difficult matter indeed to get all the evenings filled with suitable papers from suitable men, especially in small country societies, and it is a far more difficult task to get the members upon their legs to make short speeches in the after-discussion. Many a capable man, thoroughly master of his subject, has the greatest dislike to doing so, and he does

not get up. I have often been much amused, after a paper has been read containing much debateable matter, at watching the different members, many of whom were thoroughly capable of tackling the subject, looking from one to another wondering who would have the audacity to "bell the cat," just as if they were a lot of mice with that weighty matter under consideration. It is no use denying the fact, most of our countrymen are very averse to making speeches, however loquacious they may be at other times, when speaking informally to one or two. Therefore, what is the use of providing so many of this character of meeting, dependent chiefly for its success upon this speech-making? Can we wonder at non-success?

In place of some of these meetings, what very lively evenings we might often have if the subject were left to chance, and, when assembled for debate, any be at liberty to ask questions or make any remark. In replying to one another in a few words we should forget we were making speeches; at the same time, one remark would lead up to another, and a very animated debate would result. In short, a conversation rather than a set speech-making debate would, I believe, be a very welcome innovation in

some of our meetings. This character of discussion might then follow an ordinary paper ; at any rate, I believe it to be worth trying in the interests of our societies.

Another cause, I believe, too, that tends greatly to the breaking up of societies is the election of some to fill the various so-called offices. Now, in my humble judgment, only two officers are necessary,—viz., a secretary and a chairman or president. A secretary is absolutely necessary as a means of communication between the society and the rest of the world, and to collect and take care of its moneys, and keep its books.

A chairman or president, too, is necessary, for the society must have someone to act as its mouthpiece when occasion requires, and a suitable member should be elected for, say, twelve months to fill the position. It is also better to have a regular chairman than to have to choose one at each meeting. Now, the committee is one of the principle causes of trouble and disunion among the members of many a society. First of all there is its election ; well, of course, all who take a real interest in the society will desire to be a member of the committee, which is to manage and arrange all its affairs, and, as

only a few can be elected, why much heart-burning and jealousy is the result, causing nothing but trouble in the future. Then there must always be great uncertainty as to what is really the business that properly belongs to the committee, another cause of friction, not to be avoided by the most comprehensive of rules, why even from the point of view likely to be taken by the committee, their existence is not by any means conducive to the speedy and proper transaction of business for the good of the society. Any who have served on committees of even as many as nine or eleven must know how difficult it is to get enough together to form a quorum. Now, this proves that many have been chosen who do not really care to bother themselves about the business matters—perhaps to the exclusion of several better fitted for this work. The only cure for all this trouble is, I believe, to allow the business of the society to be conducted by the society itself. There would be no doubt as to a quorum, especially if business was transacted on the same evenings as ordinary meetings, either before or after the meeting. All ground of complaint would then be removed, for the decisions would be those of the society, in which

every member could have a voice, instead of a committee.

These suggestions are the outcome of some experience in societies and their working, and are made with the desire to increase, if possible, the value of these institutions as a means of pleasure and profit to photographers. I trust we may hear of many more being started during the coming year, and let each of us do all we can to increase the harmony and goodwill that should prevail.

FROM MR. W. H. HARRISON,

Accuracy.

ONE of the most common failings of photographers as a class is, I take it, the lack of accuracy. We find it in the exposure of plates, in the weighing and measuring of chemicals and solutions, and it is probably still more palpable in the keeping of accounts.

Why is it that persons most highly gifted with artistic qualifications are so generally inaccurate and careless in such matters? Rarely indeed do we meet with an individual possessing good business qualities (one of the first of which is accuracy) together with a keen appreciation of, and ability to produce, that which is artistic. We do well

to drill ourselves into working methodically and correctly.

Correctness of exposure: What an easy thing to talk about! What a difficult thing to obtain!

The temptation to prolong the exposure so long as ever that baby whom we are photographing sits still, is just too much to be resisted. When we come to develop the plate, however, we are led to comment on our folly, to comment on the baby for sitting still, and in fact to make unkind allusion to babies in general.

Without correctness uniformity is impossible. There are photographers who say, "Give us a little pyro and a little ammonia, and we will make a picture." They are far too artistic to weigh and measure. Sometimes the results are good, but generally the reverse. The men who produce the uniformly good work are the men who are accurate.

No doubt we are all anxious to outdo our *confrères* in the production of good work—work which is uniformly good. This is a worthy ambition. There is another little matter, however, which causes us a natural anxiety—viz., our balance-sheet at the year's end. Being desirous of seeing at a glance

how we stand financially, let us in the matter of keeping accounts, as in everything else, be accurate.

FROM MR. S. BOTTONE.

Something New.

IF 10 grains of potassium bromide be dissolved in half an ounce of water, and 10 grains of cupric sulphate (blue vitriol) be dissolved in another half ounce, and the two solutions be mixed, a double decomposition takes place, and the solution now contains a mixture of potassic sulphate (some of which crystallises out) and cupric bromide, or bromide of copper. Now, if we take a weak gelatine negative, which has been fixed and washed in the usual manner, and immerse it in this solution of bromide of copper, we shall find it will almost immediately begin to change colour, and after the lapse of a few seconds it will have become a very beautiful and brilliant positive, the high lights being of a pearly yellowish white. It is immaterial to this effect whether the negative have been previously dried or not; but if it has been dried, it must be allowed to soak in clean water for five or ten minutes previous to the application of the cupric bromide. If the picture be required as a

positive, it may now be rinsed, reared up to dry, and, when dry, varnished with amber varnish, and "backed up" in the usual mode; but if it be desired to convert this positive into a negative having much greater printing density than the original picture, along with greater contrast, all that is needed is to wash away the cupric bromide and then immerse the plate into a dilute solution of ammonia, say one part liq. ammon. fort. to twelve parts of water. The picture rapidly acquires a warm chocolate tone, very non-actinic, without any blocking up of the fine detail.

FROM PROFESSOR W. K. BURTON.

Advice to Beginners: Keep your Failures as Well as your Successes.

MOST amateurs, I suppose, have more failures than successes. That is to say, that more than half of the plates that they expose result in negatives that cannot only not be pronounced perfect, but that cannot even be pronounced really good in the sense of being free from any grave technical fault, and at the same time being such as to give artistic pictures. I confess myself, at least, that my failures far outnumber my successes. It is likely enough that there are some severe critics who would consider

none of my negatives successes according to the definition I have given ; but I so far differ from these, that there is a fair percentage amongst them that I consider good, and from these I make prints, or one print from each at least, and keep them. I now do most sincerely wish that, from the very first time that I handled a camera, I had kept some record of every negative that I have made, whether good, bad, or indifferent.

I was looking through the album of a friend the other day, and certainly the thing about it most notable at first sight was the very large proportion of exceedingly bad photographs in it ; and yet undoubtedly I found greater interest in it than I had in looking over nine out any ten albums that I have seen filled with technically perfect prints.

My friend is an amateur who has not practised photography for very long, but he is skilful, and probably gets as large a percentage of successes as the average amateur. His custom is, however, to keep one album in which he pastes roughly a print of every negative he takes that is capable of giving any print at all. He keeps besides this an album into which he carefully pastes what he considers his suc-

cesses. I saw this, too. It was a very creditable affair. The photographs were quite good pictures in every way, and many of them were highly interesting; but the other book was the one I enjoyed looking over by far the most.

I say to every amateur that if he will be bold enough to keep one book into which he puts his failures as well as his successes, he will be surprised how interesting it will be to others; but certainly its greatest interest will be to the author himself in after days. What could be more interesting to a photographer of long standing than to be able to look back, and to follow every step he has taken from the very beginning? I wish, alas! now too late, that I had made it possible for myself to do so. I have kept no record of what I considered my failures, but I have an imperfect one of what I thought my successes, and that is interesting enough, but chiefly as causing me to wonder of many of them how, in the name of all that is holy, I ever could have thought them successful. Here is a portrait taken some ten years ago of a girl whom I remember as pretty. It is simply awful. The pose is dreadful, the lighting is terrible, and the negative (under-exposed)

has been developed till it was hard to a degree. Moreover, there are two images, on account of the fact that the sitter moved. Yet I remember that I thought it a great work of art, and that I felt quite bitter at some not altogether flattering remarks made about it by an older amateur.

Here is a landscape again. The composition, as it happens, is not at all bad, but there is nothing in focus at all. There is more fuzziness than even Emerson would approve of, the sky has a comet across it, and there is a black patch in the foreground due to a part of the film having gone down the sink. This was done in the wet-plate days. I remember that this was greatly admired, not only by myself, but by many of my (non-photographic) friends! So on I could go, but it is very humiliating. Still it teaches a certain lesson, and that is, how very blind the untrained eye is to technical defects that stagger an experienced photographer altogether. I am quite willing to allow that I had less than the average of artistic taste when I took to photography, but I am sure that I had quite the average non-photographic appreciation of technical details; and yet I see that I must have viewed with complaisance defects

that now would condemn a negative before it left the developing-tray. There can be no doubt that the continual attention to technical details increases greatly the sensitiveness to technical defects. This is no evil in itself, but I fear that it is often accompanied by a loss of the appreciation of the effect of a photograph broadly looked at. The attention is too much attracted to details, and empirical standards are set up for "correctly-exposed negatives" and such like. Very often, for example, a negative that any experienced photographer would condemn out of hand as "under-exposed," because a great proportion of the surface of the plate remains as clear glass, will give a bolder effect than a negative that comes up to the technical idea of a correctly-exposed one.

Let it be not supposed that I advise neglect of technical matters. I do not do so by any means, but I say that many of the technical standards that photographers have erected are merely empirical, and not of necessity to be followed; and that, in any case, photographs are not produced for photographers exclusively or principally, but for that portion of the public that is blessed with some sense of the beautiful, and that technical excellence—only, as a

rule, appreciated by photographers—ought to come far second to artistic merit. A photograph that displays any artistic merit, even if technically it be very defective, is to be much preferred to one ever so perfect technically that displays no artistic merit.

But, led away by a contemplation of some of my early efforts, I have wandered from my subject, which was failures. So I come back to it, and finish up by advising any beginner who may come across this to procure “straight away” some kind of scrap-book in which photographs can be pasted, and to paste in it a print from every printable negative that he makes. I predict that if he continue this practice for a few years he will be possessed of something certainly more interesting to himself, and probably more interesting to his friends, than the album which one may assume he will also keep for his faultless photographs.

FROM MR. WILLIAMS R. KENNAN.

Large Trays for Bromide Enlargements.

THE following plan, though old, does not seem to be much known, and will be found a most excellent way for making large-sized trays, so much required at present for enlarging.

First, make substantial wood trays of the required size. Screwing them together is better than nailing. See the trays are closely jointed, and that the wood is sufficiently strong; $\frac{5}{8}$ in. finished pine or deal will do for trays 4ft. by 3ft.

Then get ordinary oil-cloth, of the white marble kind used for covering ordinary toilet stands, and glue this inside the trays—of course, woolly side next the wood—and don't cut the corners, but fold them in, the way the Willesden paper trays are done. There must be no joining the cloth. Let the edges of the cloth lap over the outside of the end and sides of the trays, fastening them there with a row of common tacks.

The very roughest trays can be used, but it will be found better to have the wood planed and sufficiently strong to make the tray rigid, otherwise the cloth may crack. Of course, if it does, paraffin wax heated will repair it. If properly made, these trays will last for years, and are most pleasant to use; and, at the same time, they are the simplest and cheapest, and don't require the periodical waxing the ordinary wooden trays always demand.

(Original Communications continued on page 75.)

Every-day Topics.

*Mr. W. H. Harrison's Experience as to
"At Home" Portraits & Groups.*

MR. HARRISON—who is so well known as a skilful and practical operator, and is not to be confounded with a gentleman of the same name and initials who is associated with the literary side of photographic work—writing in the *Photographic Review*, says:—

There are many difficulties in this work which do not present themselves in the ordinary glass room or studio. I need scarcely say that one of the greatest is the scarcity of light, and not only the scarcity, but also the directness with which it enters the apartment, coming generally from one or two small windows. If, in order to get sufficient light, we find it necessary to place the sitter near the window, then the effect is hard in the extreme: shadows black as ink, with never a bit of detail visible. It is well to place the sitter back if there be room, so that the light enters the apartment

in front of the face, thus modifying the contrasts a little. The windows are generally found profusely draped with curtains, often of a thick material, admitting little or no light. Even when they are of lace, it is quite common to find them so deeply dyed with saffron that the light which does struggle through possesses little actinic power. By all means have them pinned well back to the sides of the window. Our patroness may demur when she sees what we are about, but if we explain the necessity of the proceeding, and give her the assurance that we will exercise great care in our preparations, she will soon be won over.

Having now a strong light and dark shadows, we must resort to reflectors; and for this purpose I have found nothing better than an ordinary bed-sheet. This should be very carefully placed, not too far back, so that the reflected light as well as the direct may come pretty well from the front.

A portable stand for supporting the reflector may easily be made out of a few feet of round deal about an inch in diameter, cut into suitable lengths, and joined by means of ferrules as used for fishing-rods.

The end supports should appear like the letter V inverted, with a rod of the same

material along the top, either end of which rests on these end supports. The sheet can be thrown over this stand in the same fashion as the washerwoman has previously placed it on the clothes-line to dry. In fact, our reflector-stand is little more than a portable clothes-horse ; yet it will be found of great service. If we are not supplied with some such article, we often experience a difficulty in attaching the corners of the sheet in a suitable position. Of course, this arrangement can be moved to any part of the room when required. A similar contrivance is useful for placing a plain background when vignettes are required, the wall paper often being unsuitable for that purpose.

The reflector sheet should be of ample size, so that it may be spread out on the floor, as well as placed upright on the stand.

Where the window is very small and the general tone of the room dark, additional light may be gained by placing a large reflector outside the window. We have all noticed the effect in our rooms, when the ground and surrounding buildings have been covered with a layer of snow. How it fills the apartment with light ! In a lesser degree we may gain the same effect by the use of an outside reflector.

Many exceedingly pretty effects in lighting are to be obtained in an ordinary drawing room. Amongst others, I would mention specially the kind of picture known amongst photographers as the Rembrandt. When light and shade are correctly balanced, this is a most pleasing and artistic style of photograph, and one in great demand. It is more especially suited for studies of the head and bust than for three-quarters or full-length portraits, except when our sitter is attired in white; then the details of the drapery are sometimes more easily rendered by the figure being placed in shadow.

In order to produce a successful Rembrandt, it is of the first importance that we pay careful attention to the matter of lighting, that we may have a correct proportion of light and shade. If the light be strong and direct, then we must have much reflected light; if weaker, or more diffused, a lesser amount of reflection will suffice. In all cases we ought to avoid reflected light being used in such a manner that it can be detected in the resulting picture as such. It is desirable that the reflecting sheet be not placed too near the face of the sitter, and that it be brought fairly well to the front. The operator will do well to make a final inspection

and overhauling of the lighting previous to exposing the plate ; in order that any defects, which on a close inspection are discernable, may be rectified, such as false lights reflected in the eyes, heavy shadows caused by prominence of the nose, &c., &c. When exposing on such a picture, the great amount of shadow ought to be taken into consideration, and a due allowance made in the length of exposure. The two most common causes of failure in Rembrandts are violent contrasts of light and shade, and under exposure. For home work, the one has to be overcome by a judicious use of reflectors ; and the other by an exposure, the duration of which our experience and judgment must determine.

It is desirable to be provided with a vignette background, the wall-paper frequently being of so conspicuous design as to be altogether unavailable for the purpose. Even when the paper is quite plain there are sure to be shadows on it near the window, which make vignetting a difficulty. In choosing a background, select the lightest you can find, remembering that the weaker light of the drawing-room requires a lighter background than is necessary for the studio. Let the roller be attached to the top of background, with a cord for hanging, like a map or pic-

ture. I find it more convenient to dispense with the rod or lath at the bottom, as it is so constantly in the way.

By providing ourselves with an extra stand, as described last week, we have the choice of the two methods of hanging the background. Sometimes the stand will be useless, on account of the limited space behind the sitters ; and at other times it will be desirable to use it ; as, for instance, when the background is required away from the wall.

Never attempt this kind of work with a view lens when you are the possessor of a portrait lens. The latter is far and away the better. When we take into consideration the small amount of light with which we have to work, the frequent demand for the photographing of children "At Home," and the necessarily close proximity of the sitter to the background, and other articles more or less obtrusive, we shall readily see that a view lens is not suited for the purpose.

When photographing a full length portrait or group—the background is often quite unobtrusive if rendered by a portrait lens, but if a view lens is used, it is glaringly objectionable. The same applies to picture frames, vases, curtains, &c.

With regard to accessories, the drawing room usually abounds with them, and I have never experienced any difficulty in this direction. Flowers, grasses, and other articles useful in the making up of pictures, are often more abundant here than in the average studio. With fresh accessories and home-like surroundings, new and natural poses suggest themselves; and the work, as far as posing and picture making is concerned, is a delight. If we are photographing children, the children know that they are at home, and the freedom of speech and action allowed at home are difficulties far less than the inquisitive conduct of the older, and the half-terrified condition of the younger members, when visiting the strange studio.

To ensure success be provided with a quick acting portrait lens, and plates of the greatest rapidity (combined, of course, with the other qualities which constitute a good plate), then the difficulties are half overcome.

A plate which gives a full round image with abundant detail in the shadows, without being unduly forced, is the class of plate to be used for the work.

In making the exposure, the operator should not forget to take into consideration the colour of the wall-paper, carpets, hang-

ings, &c., &c. When there is a fair amount of light in the room, it is often robbed of much of its actinic power by the yellow or red tone of the room, and is quite misleading to the inexperienced.

Under exposure being the most common fault in photographs taken under these conditions, ought to be studiously avoided; hence, I would again urge that every available assistance to rapidity be made use of.

Perhaps groups are the most trying subjects we meet with. The inequality of the light is a cause of great trouble. In a group of eight or nine persons those farthest from the source of light are but dimly lighted, and that end of the plate will require very much more exposure than the opposite. A sheet placed on the carpet near them, in addition to the side reflection, will somewhat assist to equalise matters; and if the cap of the lens be taken off and replaced in such a manner as to give the shorter exposure to the side nearer the window, the difficulty is still further reduced. The rest must be done in development, and after-treatment of the negative. Personally I like a slow development, and think my readers will grant the desirability of its adoption for this class of work.

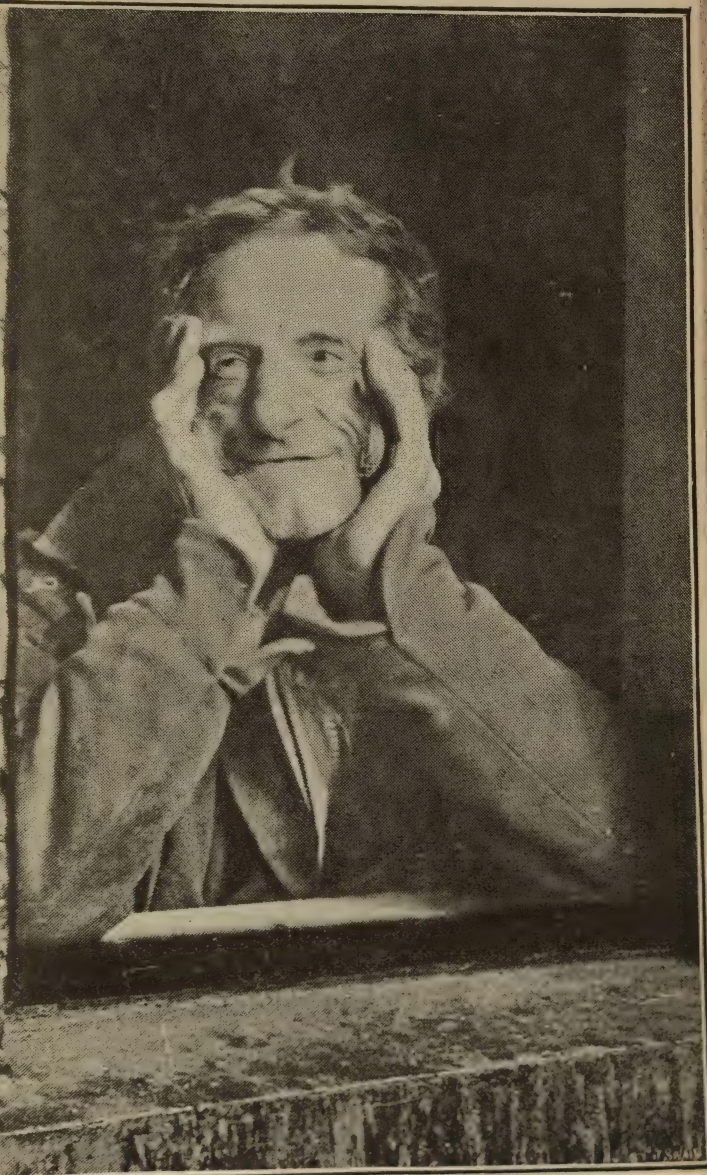
Large groups ought not to be attempted indoors, unless the room be exceptionally large and well lighted. If the apartment be but badly lighted it is preferable to photograph the group out of doors, or at the studio. Parlour portraiture is suitable for single figures and small groups, but when a group numbering more than seven or eight individuals is required to be photographed, not only is the lighting a difficulty, but trouble is also occasioned by the limited space available between sitters and camera. It is well to have a short focus lens by us ; it will often help us over a difficulty otherwise insurmountable.

I well remember the trouble I once experienced in photographing a group of seven or eight persons and a dog in a very moderately-lighted drawing-room, being supplied only with a rectilinear lens. Fortunately the room was long, so I had no difficulty in getting well away from my subjects ; but the length of exposure necessary and the restlessness of my canine sitter combined to make the task anything but an easy one.

As I have previously remarked, the time of exposure in drawing-room portraiture is very prolonged. Due consideration should be given to this fact when posing, more

especially with children, and positions chosen in which the temptation to move is reduced to a minimum. In grouping children for instance, it is often advisable to place the heads together so that one forms a slight support for the other. Sitting positions for the same reason are usually more successful than standing ; in fact experience gained in the bygone days of slow plates and long exposures will be found of great service in selecting positions in which it is easy to keep still. This is a matter which, in these times of instantaneous photography, is to a great extent lost sight of.

One word in favour of platinotype printing. The average negative produced in the drawing-room is far more suitable for printing by this process than for silver. The lighting in most cases is necessarily somewhat harder than in the studio, and by printing in platinum the violent contrasts are considerably modified ; and of course the resulting picture has the double advantage of being both more artistic and permanent, "a thing of beauty" which "is a joy for ever." To amateurs who have hitherto had no experience in this artistic style of printing, I would say "by all means try it." They will find it more interesting, and giving permanent results.



Rejlander's "She is looking at me, the dear Creature."

Photo-Block by John Swain, 58, Farringdon Street, London



To return to the subject of apparatus, I would advise my readers to equip themselves as lightly as possible. It is most fatiguing to be compelled to carry a heavy head rest and studio camera stand, in addition to the other indispensable apparatus up the quantity of steps one sometimes has to ascend.

The studio camera stand is altogether unnecessary ; the ordinary tripod answers the purpose quite as well if corks be placed on the spikes in order to protect the carpet. I would recommend a tripod the height of which may be regulated at will by the well-known sliding arrangement. The head rest should be as light as is compatible with stability. A good stock of dark slides is very convenient but provision should also be made for the changing of plates.

The use of a room, which can be temporarily darkened, is generally placed at the disposal of the photographer ; but it is well to be provided with some form of changing box or bag, many of which are in the market.

Many opportunities of doing business will present themselves in connection with evening parties, masquerade balls, bazaars, exhibitions, &c., whereby if the operator can work successfully by artificial light, he may increase business during the winter month.

The demand for night photography is very great and there opens up before us almost unlimited scope for good work in this direction.

It must remain for the enterprising reader to use whatever form of artificial light he chooses. It is not my intention to enter more fully into that subject in this paper.

I have now tried to bring before my readers some of the advantages and difficulties of drawing-room portraiture; and have recommended the methods of making the most of these advantages, and overcoming the difficulties, being the while guided by my own experience.

Perhaps some of my remarks will not be found to be in accordance with the views held by many photographers. We all know that each operator has his own pet methods of working, and some there are who are very conservative in these matters; yet if any, after wading through my remarks and observations on the subject, obtain any fresh views which prove of after service to them, I shall consider myself amply repaid for any effort which I have made.

How to Make "Spirit" Photographs.

THE plan of commencing the exposure upon both the "spirit" sitter and the

material sitter, covering the lens while the "spirit" sitter moves away, and then finishing the exposure upon the material sitter, is the mode which has been most generally adopted, whether the "spirit" photographs have been made as an amusement or for fraudulent purposes; but to get the most striking results, some points should be attended to. Indeed, if care and thought are exercised, results are obtained which may serve to illustrate the most harrowing ghost stories which the imagination can invent.

The background should consist of *dark* furniture, so as to give a *sombre* aspect to the scene. Now, considering that the spirit is generally clothed in white, and that a vague, weak, and feeble image of it is more impressive than a distinct one, it is generally sufficient if one-tenth of the total exposure is given while the "spirit" is present. It is also desirable to put the camera out of focus during this part of the exposure, say, a quarter of an inch out, for a lens of six or eight inches focus. Of course, this tends to the unsharpness of the material sitter; but if the apparatus is put back to the true focus for the remaining nine-tenths of the exposure, nothing is noticeable. As far as practicable, it is desirable that the "spirit" should be

more equally lighted than the material sitter, and the total exposure should be as much as the plate will bear ; otherwise the "spirit" may come out with only the high lights visible. We shall be glad to see any results obtained by our readers.

Floating Paper.

A USEFUL hint in connection with the printing room was published some time since in an American journal, the *Photographic Times*. A very commonly recommended way of laying the sheet of albumen paper on to the surface of the sensitising bath, is to hold it by two opposite corners and then to lower it until the rounded surface just touches the solution ; after which each corner is gradually dropped until the whole sheet is floated. With this system, however, air bubbles are apt to be formed. A method of floating which is less likely to cause air bubbles is to hold the sheet square and upright, except for 2 or 3 inches from the bottom ; where it is curled backwards enough to cause that portion to touch the surface of the liquid, at the end of the bath nearest to the operator. The hand that has held the bottom is now transferred to the top, so that the sheet is held square vertically by the two top corners. The hands are now gradually lowered, but in the same vertical plane. The sheet by this means is pushed along the surface of the bath, as though it was passing under a roller close to the surface of the solution at the near end of the dish. This pushing or scraping movement of the paper is very efficacious in preventing bubbles from forming.

SHADING THE LENS.

SHADING the lens is a matter of some importance at all times, and special importance just now that the light is intense. A glare on the surface of the glasses illuminates rough particles or dust and degrades the image while reflections from the lower part of the mount—when it projects—may do more definite harm. A piece of this black cardboard which can be so placed as to project over the front of the camera a few inches beyond the lens is a real advantage, and in few cameras there is no means of holding this. Two discs of card half an inch in diameter and held on the top of the camera by a screw each will serve, if the shading strip is cut of such a width that it just slides under these discs and between the stems of the screws; or two strips of spring brass may be used.

Ink for writing on Photographs.

THE following answers very well for numbering and marking proofs, the writing being executed on a dark portion.

Iodide of potassium	10 parts
Water	30 „
Iodine	1 „
Gum.....	1 „

The lines soon bleach under the strokes by the conversion of the silver into iodide.

Toning Baths.

ALL sorts of strange additions are made to the toning bath, and these are supposed to very materially influence the results; but we have the fact that a simple solution of chloride of gold in water

(no free hydrochloric acid to be in the chloride) seems to give every desired tone in some hands. In order to show recent suggestions we give the following; the first being from the *Photographic Times*, and said to give black violet tones, while the second is also from an American source.

BENZOATE TONING BATH.

Water	1000 parts
Benzoate of Ammonia	5 "
Chloride of Gold	1 "

URANIUM TONING BATH.

Water	6000 parts
Acetate Soda	2 "
Common Salt	2 "
Nitrate Uranium	1 "
Chloride Gold	1 "

All toning baths in which acid chloride of gold is used, and a salt of a weak acid (an acetate or benzoate for instance) is employed, are better for standing twelve or twenty-four hours before use.

Hardening the Film when a strongly Alkaline Developer has been used.

WHEN the developer has been so alkaline as to impoverish the gelatine of the film, it is quite a common thing for frilling to take place in the fixing or washing bath, and to prevent this Dr. E. Vogel recommends immersion in the following bath after development. No washing off of the developer, if pyro or hydrochinon, is required; indeed a little of the solution may be poured on before the last of the developer is off. In any case a few minutes in the tannin bath is sufficient, after which it is rinsed, fixed and washed as usual.

VOGEL'S TANNIN BATH FOR HARDENING THE FILM.

Crystallised sulphite of soda.....	10 grammes
	(about 154 grains).
Tannin	2 grammes
	(about 31 grains.)
Water	500 cubic cents.
	(about 18 fluid oz.)
Nitric acid.....	5 grammes
	(say 1 fluid drachm).

The tannin bath is also useful in the case of gelatine emulsion papers.

The Pyrocatechin Developer.

DR. EDER speaks well of the Pyrocatechin developer, but it is important to obtain pure material—he gets it from Dr. Schuchard of Görlitz. The following formula gives good negatives of an agreeable coffee-brown tint :—

EDER'S PYROCATECHIN DEVELOPER.

A.—Pyrocatechin	1 part
Sulphite soda	4 parts
Water	40 „
B.—Caustic Potash	4 parts
Water	40 „

For use, mix 1 volume of A with 2 volumes of B.

Testing Mounting Cards. What Mr. John Spiller says.

I WOULD advise every photographer to test his cards by mounting spare prints on face and back of the suspected mounts, then wrap them up in moistened white filter paper, and put them away for a day or two. If any bleaching action occur, either general or local, or any colour comes off the cards, he can draw his own conclusions ; particularly if at the same time he is assured by a blank trial that his own

photographs are not at fault. But for the test for soluble colour—whether brown, black, or olive—he need not wait so long.

Photographers would do well to adopt Mr. Spiller's suggestion, and test each batch of mounts, not only in their own individual interest, but also in the interest of the whole photographic fraternity. If dealers supplying injurious mounts find that those to whom they are sent return them promptly, they will soon learn that it is their own advantage to take more care in the selection of stock.

Photographing on Linen or other Fabric.

FOR decorating table napkins, bed-room trimmings, and so forth the following simple process works satisfactorily, and photographers may often do much extra business by introducing it to their customers.

Boil the fabric in water containing a little soda, so as to remove the dressing, iron smooth and saturate with

Ammonium Chloride.....	2 grammes (about 31 grains)
Water	250 cubic cents. (about 9 ounces)

White of two eggs.

The above are well beaten together, allowed to subside and strained. When dry sensitise on the usual silver bath—rather a strong bath is to be preferred—expose, tone, and fix as for an ordinary print on albumen paper.

Printing from a Cracked Negative.

TWO excellent ways may be mentioned. First, to put the printing frame at the bottom of a deep narrow box—say twice as deep as the largest

dimension of the frame, and the other is to suspend the frame from a roasting jack. A convenient way is to make a sort of scale pan with a board and strings; this arrangement being also useful when vignettes are to be made.

Sun Freckles.

NOW of course the *removal* of sun freckles in the negative must rest with the retoucher, but it ought not to be left entirely to this manipulator. The operator should also perform his share in rendering the task as easy as possible and thus conduce to the excellence of the finished result.

There are two main conditions which should be observed in order to obtain the best possible results in the case of sun freckles—the first is a bright but *soft* negative, the second soft and delicate lighting. With a hard under-exposed, or harsh and ill-lighted picture, it is almost impossible to deal successfully with sun-freckles—the negative *must* be kept soft and full of detail, and the lighting equally tender and judicious. Probably the best results are obtained by a semi-Rembrandt lighting, or where the face is for the most part in an agreeable half-shadow.

In some cases, in order to tone down the

sharp high lights, and confer greater softness upon the shadows, it has been found an excellent plan to interpose a screen of tissue paper between the sitter and the light. It does not appear to increase the exposure and certainly has the effect of somewhat subduing the pronounced effect of the freckles.

Important points to be borne in mind in connection with sun-freckles are—a soft negative and a soft light, but much can be done by using isochromatised or orthochromatised plates, a thing now quite easy in the studio if the simple plan of orthochromatising plates described by Ives, and detailed in the next article, be adopted. The eosine plates sold by Edwards may be used, or Vogel's "Azaline" solution as sold by Gotz, may be employed.

*Ives's Method of Orthochromatising Gelatine Plates by
Means of Cyanine.*

USE freshly-prepared plates, those only a month old often giving foggy, weak, and unsatisfactory results. A solution of cyanine in pure alcohol is prepared; this solution, containing one-quarter of a grain of the dye to each ounce of spirit, is poured on the plate like varnish and allowed to dry off, but little or none penetrating the film. When dry, the plate is soaked for two or three minutes in water, and is exposed wet, the development and after-treatment being as ordinarily. The plates which have been

coated with the alcoholic cyanine will keep for a few days, but after soaking in water a plate should be used at once.

Orthochromatic Plates and Flash Light.

MR. ED. NEWCOMB in the *Photographic Times* recommends for the flash light a yellow burning mixture and orthochromatic plates. A mixture of magnesium dust with five or six times its weight of dry powdered pure nitrate of soda flashes with an intense yellow light, and by using orthochromatised plates in conjunction with this, Mr. Newcomb has obtained excellent photographs of theatrical scenes.

Hydrochinon-Soda Developer for Gelatino Bromide Paper.

No. I. —Hydrochinon	10 parts
Water.....	250 „
Potassium meta-bisulphite...	5 „
No. II. —Carbonate Soda.....	1000 parts
Sulphite soda	50 „
Water.....	1000 „

For use mix 1 part of No. I. with 5 to 7 of No. II. Water to the extent of an equal volume may be added to moderate the action. A trace of caustic soda may be used as an accelerator, a few drops of a ten per cent. solution being put into the dish from time to time.

How to make Blue Lantern Slides or Transparencies.

Mr. Beneke's Method.

TAKE 1 ounce of fine gelatine, put it in clean water, wash it a couple of times, squeeze out the water and place it on a clean towel. After about

one hour dissolve the gelatine in 20 ounces of hot water, and filter. Coat plates carefully freed from grease with the gelatine solution warmed to 120 to 140 degrees Fahr., lay on a cold marble slab placed horizontally, and as soon as the coating has become stiff enough not to run any more, set up on nails to dry. To make the sensitizing solution, dissolve citrate of iron and ammonia, $7\frac{1}{2}$ drams in 4 ounces of water, also ferri-cyanide of potassium, 5 drams in 4 ounces of water. Mix and filter into a dish and immerse plates for about five minute, avoiding air bubbles, when dry they are printed, about double the time required for albumen paper. The last thing to be done is washing, which removes the salts and develops a rich blue print.

Smell from the Paraffin Lamp.

W IPE the outside of the lamp and the fittings carefully before putting the lamp away and before using it, is the substance of an article in the *Optical Magic Lantern Journal*, for it is not the fumes from the wick that smell, so much as the oil which has crept on the outside of the lamp, and which becomes volatilised by the heat. The so-called "sponge cloths" used by engineers are extremely convenient for wiping the lamp and for other similar uses in the photographic laboratory. They cost 2s. 6d. a dozen, and can be had at most oil-shops in Clerkenwell and other industrial districts of London. We get them at an oil-shop nearly opposite the Records Office, in Fetter Lane.

Toning with Platinum.

P LAIN or albumenised paper may be used. Make your prints as for toning with gold, but print

if anything deeper, wash thoroughly in at least three changes of water, getting rid of all the free nitrate of silver, and make toning bath as follows :—Sat. sol. oxalate of potash, 3 oz. (about 85 grammes) ; Chloroplatinite of potash, 1 to 6 sol. $\frac{1}{2}$ dram (about 2 cubic centimetres). The toning proceeds rapidly, and inclines to the cold side.

Substitute for Ground Glass.

O. LOHSE gives the following formula. The ordinary ground glass used in cameras, owing to its roughness, causes the image to lose much of its sharpness. Especially is this felt in scientific work, as in microscopical, astronomical, or spectral photographic work, where the magnifying glass must be used.

Gelatine	3	grammes (45 grains)
Chloride of barium ...	1	gramme (15 grains)
Sulphate of Ammonia ...	0.5	gramme ($7\frac{1}{2}$ grains)
Water	100	c.c. ($3\frac{1}{2}$ ounces)

The gelatine, sulphate of ammonia, and three-fourths of the water are heated together in a water bath until the solids are dissolved ; next add the chloride of barium, dissolved in the rest of the water. After mixing and cooling, press the mass into threads and then wash, melt, and add a trace of alcoholic solution of salicylic acid, and filter it through a folded filter. With this emulsion coat glass plates, and surprise will result at the extraordinary fineness of the optical picture as seen through the objective.

Mayall's Plan of Printing from Cracked Negatives.

A ROASTING-JACK is hung from the roof of the printing shed, and from it depend four

cords, holding up a square board like a scale pan. When the jack is wound up, this board revolves first one way, and then the other, and cracked negatives laid upon it to print, leave scarcely any record behind them of the fault. For vignette printing this method is useful.

Another way of Printing from a Cracked Negative.

PUT the frame at the bottom of a box about the same size across as the printing frame, and twice as deep as its width. A sheet of tissue paper may be laid over the frame.

Mr. Hackett's Solution for Brightening and Clearing Gelatine Negatives.

Saturated solution of common alum, 20 ounces
(about 600 cubic cents.)

Sulphuric acid, $\frac{1}{2}$ to 1 fluid ounce
(about 14 to 28 cubic cents.)

The above is cheaper than mixtures containing citric acid, and seems to answer better in most cases. Pyro stains go at once, and silver stains caused by contact with damp printing paper are cleaned off, if taken at an early stage. A dense negative may be left in the bath all night without injury. Thorough washing away of the acid is desirable.

The Focussing-Screen too Opaque or too Transparent.

IN the former case, make the glass warm, rub over with a piece of wax, and polish off with a soft cloth; in the latter, rub with a piece of chalk and wipe off the excess.

Mucilage that will not become Sour.

Gum 5 ounces
(about 150 grammes)

Water..... 1 pint
(about 600 cubic cents.)

When dissolved, add :

Sulphate of alumina 50 grains
(about $3\frac{1}{2}$ grammes)

Water 2 drachms
(about 8 cubic cents.)

Mix well, allow it to settle for a few days, and pour off the clear.

Backing Plates. How Mr. W. Carter operates.

A PASTY water-colour is applied with a small elastic roller, such as printers use for inking their type ; ground burnt sienna, mixed to a stiff paste with dextrine and glycerine, answers well, but almost any stiffish water-colour may be used, provided it is neither white nor blue. It is easy to wipe the colour off with a damp rag, and this should be done before development.

Flexible Paint for Backgrounds.

THE following retains sufficient flexibility to enable the sheet to be rolled :

Soft Soap 2 ounces

Boiling water 12 ounces

Dissolve and work well into usual oil paint ; 6lbs.

Encaustic Paste for Giving a Bright Surface to Albumen Prints.

WHITE wax, one part ; oil of turpentine, four to five parts ; melt the wax and stir in the turpentine. The print should be perfectly dry, when a very small quantity of the above is smeared on with

a piece of flannel, after which the print is passed through the burnisher. Ashman recommends ozocerite or hard paraffin wax as the lubricant, and benzoline as the solvent.

Giving Matt Surface to Albumen Prints.

THE finest pumice powder is sifted from a muslin bag over the print, and is then rubbed on with a soft india-rubber pad. After careful removal of the powder, the surface may be wiped with a clean damp cloth.

Platinotype Developer to Produce Brown Tones.

SOLUTION A :—

Neutral potassium oxalate..... 295 grammes
(about 10½ ounces)
Water..... 1 litre
(about 35 fluid ounces)

Solution B :—

Mercuric chloride 5 grammes
(about 77 grains)
Water..... 100 cubic cents.
(about 3½ ounces)

Solution A is heated to 70 or 80 degrees centigrade, and about one part is added to fifty of B, more or less, according as the brown tone is to be more or less decided.

Magnesium Pyrotechnic Mixture Giving a Violet Light.

POWDERED permanganate of potassium... 2 parts
" bichromate of potassium 2 "
" magnesium 1 part

Mix, just before using, by passing the materials through a small sieve, pile up on a piece of sheet

metal, and fire the tip of the pile by a red-hot wire or one of the fuses used for lighting pipes.

Coating Plates with Emulsion: How Mr. Kirkly Works.

ALTHOUGH most photographers purchase their plates, and these are ordinarily machine-coated, not only the experimentalist, but also the practitioner, often has occasion to coat a few plates. In such a case the following hints will be useful.

The emulsion is melted in a water bath, say at a temperature of about 100 deg. Fahrenheit, and is filtered through very fine and carefully-cleaned muslin to the centre of which a thread is attached, so that the emulsion can run down without forming air bubbles. The receiving-cup should also stand in warm water. A cleaned glass plate being now taken on the pneumatic holder, a small ladle-full of the emulsion is dipped out of the receiving vessel and poured on the centre of the plate, and is spread over its surface by means of a bent glass rod. After a little rocking, to make the film even, the plate is put on a level slab of plate glass to set. A suitable ladle of convenient size may be a silver spoon, table, desert, tea, or salt, with the stem bent a little just beyond the bowl, or a clay pipe of suitable size may be used.

Balagny's Carbonate of Ammonia Developer.

SOLUTION A:—

Carbonate of Ammonia	50 grammes :
	(about $1\frac{3}{4}$ ounces
Water	1,000 cubic cents.
	(about $1\frac{1}{4}$ pints)

Solution B :—

Pyrogallic acid.....	15 grammes (about $\frac{1}{2}$ ounce)
Alcohol	250 cubic cents. (about 9 ounces)
Ammonium bromide	3 to 6 grammes (about 46 to 92 grains)

For use, 50 volumes of A are mixed with from 1 to 2 volumes of B. In case of under-exposure, it is soaked first in A and B is added afterwards.

Liesegang on Preserving Paste.

KEEP the paste-pot under a glass shade, side by side with a vessel containing a little ammonia. This device hinders both drying and putrefaction.

Mercuric Intensification by Scolik's Method.

MERCURIC chloride, 1 part ; potassium bromide, 1 part ; water, 50 parts. Wash the fixed negative thoroughly ; immerse in above till thoroughly whitened ; rinse, and soak in a mixture of equal parts of saturated solution of sulphite of soda and of water. A moderate washing is required.

Obernetter's Method of Making Colour-Sensitive Plates.

ATHIN emulsion made up with but little gelatine is used, and each plate is flooded with the following solution, allowed to remain in contact with it till the film is softened, and then rinsed. Erythrosine solution, containing one part of the colour in one thousand, 50 parts ; silver nitrate solution, containing one part in a thousand, 50 parts ; ammonia, 3 parts. Alkaline pyro or hydrochinon is recommended.

MERCURIC INTENSIFICATION, FOLLOWED BY HYDRO-
CHINON.

THE gelatine negative is treated with mercuric chloride in the usual way (see preceding page), and after *thorough washing* is immersed in a solution containing both hydrochinon and sodium sulphite. This gives a dense negative of a bluish-black tint. The process is also available for gelatine transparencies.

Abney's Method of Eliminating Green Fog.

CONVERT the negative image into bromide of silver by immersion in the following, bath till the whole is whitened :—

Perchloride of iron	50 grains
	(about 3.25 grammes)
Potassium bromide.....	30 grains
	(about 2 grammes)
Water.....	4 ounces
	(about 113 cubic cents.)

Wash well and treat with ordinary ferrous oxalate developer (in daylight) until the colour and density of the image are restored.

Mr. E. Vogel's Hydrochinon Developer.

Crystallised sulphite sodium.....	40 grammes
	(about 617 grains)
Hydrochinon.....	7.5 grammes
	(about 106 grains)
Water.....	150 cubic cents.
	(about 5½ ounces)
Carbonate of potassium.....	50 grammes
	(about 772 grains)

For use, one volume is mixed with seven volumes of water.

GAUTHIER'S METHOD OF GIVING A BROWN COLOUR TO
FERRO-PRUSSATE PRINTS.

THE blue print, after washing and drying, is immersed in an ammonia bath, 1 to 9, till nearly decolourised. It is then washed and soaked for about twelve hours in a solution of tannic acid containing one part in fifty of water. Sometimes the brown colour does not fully develop in the tannic acid bath till a small quantity of ammonia has been added.

A Thin Mountant which will Keep Well.

WATER	30 ounces.
Soft gelatine.....	$\frac{3}{4}$ "
Arrowroot	4 "
Alcohol	2 "
Carbolic acid	12 drops.

The arrowroot is stirred into the water, and the gelatine is placed in to swell, after which the whole is heated in a water bath till the arrowroot has swelled and the gelatine dissolved. The carbolic acid is added to the spirit, and then stirred in.

Photo-Etching Method for Making Intaglio Plates.

THE photographic intaglio method ordinarily known as that of Klic is that which has been most extensively used in recent times, and which has generally given the best results; and, moreover, it is a method which any amateur or professional photographer can carry out with such appliances as he is likely to have by

him. Indeed, in respect of difficulty of working, it is not much more than the ordinary carbon process. We are, therefore, glad to be able to give reliable details of working, the result of the experience of Mr. A. W. Turner, who has been labouring under the superintendence of Colonel Waterhouse, in the Government Survey Office at Calcutta :—

Original Negatives.—These should be unreversed, of good quality, clear, bright, and not too dense. For half-tone work a good silver-printing negative will generally give good results. For line-work the negative need not be so dense as for photo-lithography, but should be clear and bright, and show the finest lines well. As the process possesses more power of bringing out faint lines than does photo-zincography, it is better as a rule to intensify with pyrogallic acid and silver, rather than with the usual intensifier used for negatives of maps. In order to secure clear borders on the copper-plate, the subject must be masked out on the negative with thin opaque paper or black varnish.

The Transparency.—As a negative image is required on the copper, a reversed transparency must be prepared from the negative, and the simplest way of doing this is by means of the Autotype special transparency tissue, developed upon a glass plate by the ordinary Autotype pigment printing process. When subjects have to be enlarged or reduced, the transparencies are best obtained in the camera on gelatine dry plates, but should not be too dense; care must also be taken that they are properly reversed, so as to

produce a negative image on the copper-plate. Looked at from the film side, the image should be reversed just as it is on the negative.

Transparencies can also be obtained with the ordinary Autotype Standard Brown or other tissues, and this method is particularly suitable for dense negatives, which would take a long time to print and give heavy shadows. Formerly such transparencies were intensified with permanganate of potash, but this is not now found necessary. The transparencies obtained with the special transparency tissue do not require intensifying, even for line subjects. The exposure under the negative varies, but from twenty to thirty minutes is usually sufficient for half-tone subjects, and for line subjects about two minutes in the sun. The transparency should be clear and bright in the lights, and not too dense in the shadows. Held at a short distance from a sheet of white paper, the effect should be very much as desired in the finished print, because the etched images reproduce very closely the characteristics of the transparency. Before being printed from, a mask of the size the printed picture is desired to be should be cut out of thin, semi-transparent paper, and applied on the back of the transparency, so as to provide a "safe edge," to prevent the picture washing up on development.

The Copper-Plates.—These should be of the usual thickness as prepared for the use of engravers, and of the best copper, free from holes, flaws, or surface-markings, which will assuredly be brought out in the subsequent operations of steel-facing, and spoil the effect of the prints. They must be finely polished by rubbing with oil and fine tripoli or flour-emery, finishing up with powdered chalk applied with a felt pad. They then have to receive a fine resinous grain,

in order to hold the gelatine film during the after-process of etching, and also to break up the etched parts of the surface of the copper irregularly, so as to give them the necessary holding power to retain the ink during the printing. We have found that the best substance for this purpose is very finely-powdered bitumen, though powdered rosin, or a mixture of the two, may also be used. The powdered bitumen is placed in a large box, which is best mounted on pivots, so that it can be turned over to allow the dust to fall from one side to the other ; or, if the box is not so mounted, the powder can be blown up with a bellows, or stirred up in any way, so as to produce a cloud of fine dust inside the box. As soon as the coarser particles have subsided, the plate is placed near the bottom of the box, and left for five or ten minutes till a sufficient quantity of the dust has been deposited upon it. A more even grain is obtained for fine work by allowing the dust to settle longer (for two minutes), and repeating the operation two or three times, so as to have a large quantity of very fine dust. For half-tone subjects more grain is required than for line, and dark heavy subjects require a stronger grain than light and fine ones. Some experience is necessary to know the proper amount. The loose deposit of bitumen has next to be fixed to the plate. Formerly this was done by exposing the plates for a few seconds to the fumes of benzole or oil of lavender, but Mr. Turner has found it better to do it by heat, the plate being moved about for a short time over a dish containing a little flaming spirit of wine. A heater warmed by gas would, however, be better. It is an advantage to allow the plates to cool spontaneously after this operation. The plates are then ready to receive the negative transfer print.

The Negative Pigment Print.—The tissue that has been found to answer best for producing the negative image in gelatine on the copper-plate is the Autotype Company's Standard Brown, No. 100. The tissue is sensitised by immersion for one to four minutes, according to the season of the year, in a solution of—

Bichromate of potash 30 parts.

Spirit of wine 150 „

Ammonia 4 „

Water 700 „

It is squeezed down upon a glass plate prepared with French chalk, fanned for about half an hour, placed in a box containing chloride of calcium, and left to dry. It has been found advantageous in the cold weather to leave the tissue for a few days in the chloride of calcium box before use.

The sensitised tissue is cut carefully square to the size required, and laid in its place over the masked transparency in an ordinary printing-frame, and exposed to the sun or diffused light for a sufficient time to produce a thin bright image when developed on the copper-plate.

Development.—The copper-plate bearing the dust-grain is placed in a dish of cold water—in hot weather ice must be used to lower the temperature to at least 60 deg.—and the exposed tissue is immersed in the water, quickly arranged in its place on the copper-plate, and withdrawn with the latter as soon as possible, and squeezed down upon it. In the cold weather the tissue should be allowed to soak in the water for about two minutes, and more time can be taken in placing it in position on the plate. The plate with the tissue is left for a time, and then developed in the usual way with warm water. It is

better to slightly over-expose and reduce the image, if necessary, by the addition of a small quantity of bicarbonate of soda in the warm water. It is very important that the image should be thoroughly developed, and free from any soluble gelatine. The image being negative, *i.e.*, the lights of the picture being represented by varying thicknesses of gelatine, and the shadows by more or less clear copper, some care is required in development, and this should be conducted slowly with water at a moderate temperature.

After development, the plate is flowed with a 5 per cent. solution of alum, and dried off with spirit of wine. This clears up the shadows and gives a sharper and crisper image than is obtainable by drying spontaneously. It is well to begin with a weak spirit, containing about equal parts of spirit and water, flowing it over the plate from one corner, so as to drive before it the water in the film, together with the insoluble scum which the spirit forms with any loose soluble gelatine remaining on the surface, and which must be removed with care to avoid markings on the surface. After treatment with stronger spirit till all moisture is removed, the plate may be set aside to dry, but in hot weather it should be finally flooded with a solution of one part of glycerine in twenty parts of spirit of wine, in order to prevent the splitting off of the film on drying.

The plate is now ready for etching. The borders all round the picture, as well as the back of the plate, are painted with a varnish containing 20 per cent. of bitumen, dissolved in benzole and left to dry thoroughly.

For etching, solutions of perchloride of iron are

used in five different strengths, as shown in the table below :—

No.	Strength on Baumé's Scale.	Sp. Gr. at 63 deg. Fah.	Approximate percentage of $\text{Fe}^2 \text{Cl}^6$.
I.	45 deg.	1,444	47
II.	40 deg.	1,375	41
III.	38 deg.	1,349	38
IV.	35 deg.	1,313	35
V.	27 deg.	1,225	27

A stronger solution, at 48 deg. Baumé, has also been tried, but has no penetrating power through even the thinnest film of gelatine.

The solutions are laid out in a series of flat dishes, into which the plate to be etched is immersed in order, beginning with the strongest (No. I). For line work, as a rule, only Nos. I. and II. are used, the plate being left in No. I. for about two minutes, and then removed to No. II. for another three minutes.

For half-tone work, the plate is immersed in No. I., and not left more than one minute after the copper is first attacked; it is then transferred to No. II., and allowed to remain for three or four minutes; then it is passed into No. III., and remains for two minutes; to No. IV. for one minute, and finally to No. V., where it remains for about a minute, till the highest lights are just about to be attacked. The use of the different strengths of perchloride, and the time the plates should be exposed to them, are matters which depend on the nature of the film, the temperature, and the hygrometric state of the weather at the time, and must be learnt by practice. A very good guide for the time the plates should remain in each solution is till the action of the perchloride appears to stop; it is then time to transfer it to a weaker solution, or a distinct line will be shown, and result

in a hard black and white picture. With the Auto-type Standard Brown tissue there is no difficulty in following the progress of the etching in its different stages. The whole operation is usually completed in from five to ten minutes, and should be stopped as soon as it is seen that the high lights are sufficiently bitten. In dry cold weather it has been found that the gelatine has less resisting power than it has in the warmer months, when there is more moisture in the air. Stronger solutions are therefore required as the weather becomes drier and colder.

As soon as the plate is considered sufficiently bitten, it is washed under the tap with a strong current of water, so as to drive out the perchloride of iron as quickly as possible. The gelatine film is then gently removed by rubbing with a muslin or cotton rag. The plate having been dried, the asphaltum varnish is carefully washed off the face and back, with benzine. The face of the plate is rubbed over with a little whiting and ammonia, dried and polished off with a little spirit of wine. The plate should now show a fine smooth polish on the highest lights, with a gradually increasing depth of biting through the lights to the shadows, and a fine clear grain throughout.

Obtained as above described, the plates now require no re-biting, and very little touching up beyond oil-rubbing and cleaning.

The lettering for half-tone plates is usually done by hand, but recently we have adopted a method of lettering the transparencies by printing from type on slips of thin collodionised gelatine, which are cut and fastened in their proper places on the transparency. In order to make the printing more opaque it is dusted over with red bronze powder, which

adheres to the freshly-printed letters, and gives them great opacity. Facsimile names and writing or printing on thin paper can also be inserted by coating the plate with sensitive asphaltum solution and exposing it to light under the writing, &c., then developing with turpentine or benzine, and etching with perchloride of iron. Flat and shaded tints can also be inserted on the plates by applying and fixing the dust-grain, then stopping out on the plate all but parts required to be tinted, and etching with solution of perchloride of iron at 20 deg Baumé. This satisfactorily takes the place of machine-rulings on architectural drawings, and is much less trouble. In skilled hands a variety of effects could be produced by the combination of photo and hand-etching.

After lettering and touching up, the plates are carefully steel-faced, and are ready for printing. They require very careful inking and wiping off, and good pressure in printing to avoid streaks of wooliness. The native printers soon learn the work, and with due care the proportion of spoiled prints is small—much more so than with collotype.



Original Communications to the Annual.

(Continued from page 36.)

FROM MR. W. E. DEBENHAM.

Intensifying Negatives.

OF all the methods for intensifying negatives that I have tried, none have proved at all equal in my hands to that with mercury iodide, followed by Schlippe's salt. It has the advantage, in the first place, of giving as great range of density as may be required, from a mere brightening up of a plate that is nearly right to start with, to a very great increase of vigour on a plate that is weak enough to require such reinforcement; and in the second place, of giving the promise of greater permanence than can be expected from most other methods of intensification.

The only objection, so far as I know, that has been raised against the process is a liability to stain the film, but this need not occur if reasonable care is taken in washing and fixing; and, indeed, in so far as imperfect fixture is concerned, it may be assumed that the intensification has only produced immediately a result that would more or less have come on without it in time.

The negative, then, must first be properly fixed and then washed. Half-an-hour in an upright tank suffices for washing most films. The plate is then flooded with a solution made by pouring strong solution of iodide of potassium into a saturated solution of bichloride of mercury, until the abundant red precipitate first formed is just redissolved. For very thin negatives this mixture may be used as it is, but for ordinary negatives it may be diluted with from three to four parts of water. Whilst washing after this treatment, look at the back of the negative. If a milky-looking deposit is seen between the film and the plate, it has been insufficiently fixed, and should be replaced in a fresh clean hypo until the deposit is dissolved, when, after another good washing, the mercury treatment may be renewed. After thorough washing from the mercury solution, say for half-an-hour in an upright bath (or more if the gelatine is very thick), flood with a five-grain solution of Schlippe's salt until the image is seen to be fully acted upon to the back, and then wash once more before drying.

FROM MR. THOMAS GULLIVER.

Card-board Slide Carriers.

IT sometimes happens that extra carriers are wanted for some particular sized plate, or for a copying camera, or as mounts for lantern slides. All the materials required are some good cardboard, a glue-pot, and some pieces of common talc. One piece of card is cut to nicely fit the dark slide or lantern slide; then an opening, the size of the plate or slide to be used; another card is cut the same outside, but one-eighth of an inch smaller inside; then at the corners are fitted strips of talc. When ready, the talc strips

are glued on and the top card put in place, having previously been glued with thin glue. When slightly set, it is best to put the whole under pressure in a press, or under a heavy weight. The use of the talc is, the carrier remains stiff and in shape for years, and does not easily bend.

How to Photograph a Bicycle.

THE bicycle was brand new and highly polished, so the light was reflected in unsightly patches, and the print was not quite satisfactory. On the next occasion the owner of the machine took it out for a few miles on a dusty road, when, the reflecting brightness being dusted over, another plate was exposed, and this time the photograph was a success, every detail showing nicely, and altogether far superior to the first attempt.

FROM MR. E. W. FOXLEE.

Toning and Intensifying Carbon Transparencies.

IT is possibly not known to every amateur that both the colour and density of carbon transparencies can be modified to an almost unlimited extent after they are finished. Such, however, is the case. For instance, if a transparency made in a tissue containing an alizarine pigment—and most English purples and brown tissues do—be immersed in an alkali, say a solution of carbonate of soda, the image will become much warmer in tone. A solution of permanganate of potash renders the image of a very non-actinic colour. The permanganate is often used as a means of intensifying thin trans-

parencies when they are used for the reproduction of negatives, or for enlarging from. Carbon transparencies can be intensified with pyrogallic acid and silver in the same manner as collodion negatives. They then acquire a rich brown tone.

A great variety of colours and tints may be secured by precipitating different colouring matters in the film by double decomposition, as in dyeing fabrics. For example, if a picture be first immersed in a weak solution of a salt of iron—say the perchloride—and afterwards treated with one of gallic acid, a rich velvety black will result. With different salts of iron, and, instead of gallic acid, using pyrogallic acid, infusions of galls, logwood, &c., a great variety of purple and black tones can be obtained. By first heating the transparency with a solution of iodide of potassium, followed by one of bichloride of mercury, a bright red, iodide of mercury, will be precipitated in the film. A proto-salt of iron, succeeded by ferrocyanide of potassium, will yield a blue Prussian blue. Acetate of lead, followed by bichromate of potassium, produces a bright yellow chromate of lead. By the double decomposition method, any colour or tint can be got. It is scarcely necessary to say that, whatever coloured is obtained, it will be *plus* that of the transparency in the first instance. Therefore the tissues best suited to the purpose are those containing but little pigment, and that of a transparent character.

In order to avoid staining, it is necessary that the surface of the film be well washed between the first and second treatments. Sometimes when the transparency is made on a substratum of chromated gelatine there is a tendency for the lights to become stained. This may, however, be avoided by first of

All immersing the picture in very dilute hydrochloric acid for a minute or two, and then well washing.

FROM MR. G. W. VALENTINE.

A Cheap Way of Producing Lantern Slides.

CHOOSE a negative that has plenty of detail, and one that has been nicely exposed and properly developed, and take a print on white albumenised paper; after which, thoroughly wash, tone, fix, and wash again, and mount on a chemically clean lantern glass, face downwards, with freshly-made starch paste. Well rub down, and see that there are no air-bubbles between the print and glass; stand up to get thoroughly dry, after which proceed to lightly rub away all the paper with fine glass paper until you come down to the albumen; well dust, and give a good warming over a gas flame, and coat with transparent varnish; clean and polish a lantern backing plate; insert a round mask between the two, and if all has been kept nice and clean the results will surprise you. They can also be tinted or coloured before varnishing.

The Toning-Bath.

TONING-BATHS are very seldom found to work, after being in use for a month or so, as they ought to do. The reason of this is, I have found, chiefly due to the bath either having been exposed to ever so little white light, a continuing action seems to be set up, or there has been added to the bath too much alkali, either of which will precipitate the gold in solution. I have made it a custom to never expose the toning-bath to ever so weak a white light; and since adhering to that I find it

quite possible to tone more than the proverbial sheet of albumenised paper with one grain of gold. Seeing is believing. Try it.

FROM MR. J. A. GEE.

Frame Your Picture.

"NOTHING succeeds like success," as a certain advertisement has it, and when a young amateur goes abroad for his holiday in the hopes of bringing back some pleasing records of his travels, he is perhaps mortified on returning to find those records only third or fourth rate in quality; and if the following wrinkle enables him to succeed I shall feel rewarded. Three years ago I was just about packing up my kit for a photo tour in South Devon, when an old friend remarked to me, "Mind you frame your picture," and, in explanation, said that a photograph taken from, say, the inside of a room, through the open window, would be of a far better quality than if it were taken outside the window in the full glare of daylight, although both might be correctly exposed, because the abundance of light outside, striking the lens from all points, would tend to fog and lower the tone of the photographic image on the plate, and at the same time there would be a larger picture entering the camera than that covering the plate. As this was quite unnecessary and tended to fill the camera with diffused light, which was a disadvantage, he suggested "framing the picture," or, in other words, cutting off all that part of the picture that overlapped the plate. To carry out this suggestion I got the lid of a cardboard quarter-plate grooved plate-box, cut a round hole in the centre, and glued a rim on the outside to fit on to the lens. This

answered well, as nearly all the unrequired picture was cut off, and the resulting negative was a great improvement on the others I had taken without. As this arrangement precluded the use of a cap, I contrived a flap-shutter to work inside. This is easily done by inserting a piece of wire through the two sides, about half an inch above the centre hole, and fastening a piece of cardboard to it large enough to form a flap. About three-quarters of an inch of wire should be left projecting on one side to be formed into a little handle to raise and lower the shutter. This form of apparatus for outdoor photography cannot be beaten. Sky shades are recommended, but this forms a sky shade and every other shade. The result of the use of this simple piece of apparatus was a series of about forty good negatives, which was very satisfactory. I have since tried the camera without this adjunct, and returned with anything but satisfactory results; but this year I have proved beyond doubt its great advantage.

FROM MR. V. A. CORBOULD.

Some Useful Hints.

A FEW things suggest themselves to me as being useful, though perhaps not new. The first is the replacing of a broken focussing-screen. This accident usually happens, I have found, at the only time you particularly want a screen, and by preference when you are in a country place where there is no photographic dealer keeping the finest quality requisite for focussing glasses. The best thing, under the circumstances, is to make your own, and not try to use a makeshift such as is usually sold as ground glass by the local glazier, who may not very

clearly understand what is wanted. A man was trying to persuade me, when I was in Brittany this summer, that a ground glass having red stars upon it would be much more ornamental, and was not much more expensive. The best way to make the ground surface is to obtain a good plate glass, free from defects; also some fine emery, which it is best to wash first in ether, so that all the grease is removed; then to shake up in a bottle of water, and pour into a jam-pot and allow to settle. The heavier particles will, of course, settle first, leaving the finer deposit which settles last, on the surface.

This finer emery is what is wanted. A little is taken on the finger and put on the glass plate to be ground for the screen. You can now kill two birds with one stone, if you have a cutting-shape by you, as you can use this as a grinder, rubbing the emery against the future focussing-screen with it. Use a circular motion in the grinding. When finished (which will take about eight or ten minutes, according to the surface of the glass, for a half-plate), you will find that both cutting-shape and focussing-glass have the finest possible ground surface. The advantage of grinding the cutting-shape is that you will be able to see the print whilst you are trimming it, and, in addition, you will be less liable to cut your fingers by the plate slipping during the operation. If the glass screens of your developing lamp are treated in this way, the light emitted will be all the better for the diffusion thus gained. If the coloured glasses are flashed, take care not to grind the flashed side, or you will probably get a sickly pink colour to the ruby, which will cause retching or sickness when developing, as I have found by experience.

Another thing worth mentioning is that by the in-

terposition of from three to six "stripping skins" between a negative and the sensitised paper, a very agreeable softening may be obtained, though not to the extent which at first sight you would imagine you would obtain by this proceeding. In portraits you can very often get rid of freckles by this means, and do away with the too marked effect of retouching.

With regard to one other matter, namely, intensification, I have found that by the use of the following solution (after the negative has been washed free from hypo, and treated with alum, and re-washed), a very non-actinic colour can be obtained, varying from red brown to orange :—

Mercuric chloride 150 grs.

Ammonium chloride 150 grs.

Water 10 oz.

After the negative is bleached, treat with :—

Ammonia..... 10—15 mins.

Water..... 10 oz.

By this means the red colour is obtained, which, if the ammonia were stronger, would have turned to a blacker colour, which is, however, not so non-actinic. Thoroughly wash between the operation of bleaching and darkening. Also again after the ammonia, as, if the ammonia is not removed, a white deposit is sometimes formed on the surface of the film.

Should the negative now be too dense, it can be reduced by placing it in a bath of hyposulphite of soda. It can by this means be reduced to what it was before intensification was commenced.

FROM MR. F. T. BENNETT.

Detective-Camera Work.

OF late I have devoted much time to instantaneous work, and trust the following remarks, which

are the result of practical experience, will contain a hint here and there which will prove of some slight service to those of your many readers who are touching that particular branch of photography.

When using hand or detective cameras, one of the most important things to remember is to hold the camera perfectly still during the exposure, failing which the image will be blurred and shaky, for it must be remembered, as in firing a gun off, that the slightest movement or shake at a distance of, say, fifty or a hundred feet, means something very considerable. My usual method is to hold the camera tightly against my chest with the left hand, using the right to release the shutter.

The simpler the apparatus the better. I am at present using a home-made camera in a cigar-box, carrying three double metal slides. The shutter is constructed on Lancaster's principle, and the lens is a single one, working well at $f/9$, and has a much greater depth of focus than most doublets working at that size stop.

For development I prefer a developer consisting of ammonia, bromide of ammonium, and dry pyro. I keep the ammonia in solution, 1 oz. to 20 of water; the bromide of ammonium also in solution, $\frac{1}{2}$ oz. to 20 of water; taking $\frac{1}{2}$ drachm of each to the ounce of water, and dry pyro as required when developing. It is as simple and cheap as a developer could possibly be, and, as far as my experience goes, it is far superior for shutter work to iron (followed by intensification to get density) or hydroquinone. Many workers object to the yellow stain given by using the pyro without sulphite of soda (or a substitute), but I feel sure that if they will expose two plates on the same subject, and develop one with plain pyro and

the other with a pyro developer containing sulphite of soda, they will find that the one developed with dry pyro, yellow and stained as it will most likely be, will possess a superior printing quality, and give a truer rendering of colours than the cleaner one preserved from stain with sulphite of soda. Occasionally I have substituted caustic potash for the ammonia, and, with plates that will bear it without frilling, it is a very powerful developer; but with plain pyro the stain is so bad as to make printing very slow indeed. Hydroquinone is very good for those who are blessed with plenty of time and patience, and will give wonderful results if the development be continued for hours; but for practical use I do not think it as good as pyro.

With regard to plates, I prefer to use the fastest obtainable, which I believe to be the Ilford "Red Label." I have always found them of uniform quality and thoroughly reliable. They have one or two little faults, one of which is the way the Ilford people pack them with pieces of cardboard between the films, which, when the plate is developed, leave a nasty mark along the edges, about a quarter of an inch in the plate at top and bottom. There is also another fault common to all very rapid plates, viz., that they do not, like wine, improve with age, and when a very stale plate is developed it will be found more or less covered with irradiscent stain, the best remedy for which is to over-develop, and afterwards reduce by adding a few drops of solution of ferricyanide of potassium to the fixing bath; or it may be removed by rubbing down with methylated spirit on a soft cloth or leather.

Another thing that needs great care is the dark room and the ruby lamp, as few dark rooms are absolutely

safe for any great length of time when dealing with the most rapid plates. It is advisable to keep the developing dish covered as much as convenient with a sheet of orange or ruby glass. I am at present using a piece of glass coated with a mixture of gelatine and red ink varnished, which costs but little and answers the purpose admirably.



INDEX.

	PAGE.
Adcock on Bits of Experience	15
Adhesives	60, 64, 66
Astronomical Photography	7
At Home Portraits	37
Backing Plates... ..	61
Bennett on Detective Camera Work	83
Bothamley on the Eye and the Lens	9
Bottone on Intensifying	29
Burton's Advice to Beginners... ..	30
Cards, Testing	53
Celluloid Film, Eastman	6
Chapman Jones on Thick and Thin Films	11
Clearing Negatives	60
Coating Plates... ..	63
Corbould on Useful Hints	81
Cracked Negatives	59
Debenham on Intensifying	75
Detective Camera Work	83
Development and Developers... ..	53, 57, 63, 65, 84
Drawing-Paper, Prints on	6
Eastman's Celluloid Film	6
Eclipse Expedition, The	7
Eikonogen Developer... ..	5
Encaustic Paste	61
Eye and the Lens, The	9
Fearn, a Few Hints from	17
Ferro-Prussiate Prints, Brown Toning of	66
Flash Light, The)	5
Focussing-Screen, Altering	60
Foxall on Photographic Societies	22
Foxlee on Toning Carbon Transparencies	77
Gee on Framing	80

	PAGE.
Gulliver on Cardboard Carriers	76
" Photographing Bicycles	77
Ground Glass Substitute	59
Hardening the Film	52
Harrison, W. H., on Accuracy	27
" " At Home Portraits	37
Harrison, W. J., on Surroundings of Pictures...	51
Intaglio Plates by Photography	66
Intensifying 29, 64, 65, 75	
Kennan on Large Trays	35
Lantern Slides, Blue	57
Linen, Printing on	54
Magnesium Lighting	5
Ney's Magnesium Lamp	5
Orthochromatic Photography 56, 57	
Paint, Flexible	61
Paraffin Lamp, Smell from	58
Past Year, Review of	3
Photo-Engraving, Klic's	66
<i>Photographic Review</i> , The	7
Platinum Toning	6
Platinotype Developer for Brown Tone	62
Printing 18, 50	
Printing on Drawing Paper	6
Prints with Matt Surface	62
Roden on Printing	18
Rough Paper, Printing on	6
Shading the Lens	51
Sun-Freckles	55
Surroundings of Pictures	13
Telegraphic Transmission of Photographs	7
Thin and Thick Films	11
Toning	51
Valentine on Lantern Slides	79
" Toning Baths	79

